

## RESEARCH NOTE

### ANYPHAENIDAE IN MIOCENE DOMINICAN REPUBLIC AMBER (ARACHNIDA, ARANEAE)

**Keywords:** Anyphaenidae, Miocene amber, Dominican Republic

Anyphaenids have a worldwide distribution but are particularly common in the neotropics. They are medium to large, long-legged spiders with claw tufts formed from several rows of lamelliform setae, and the tracheal spiracle situated considerably more anteriorly than in other spiders; however, the latter character varies between genera. The family contains fast, active hunters, usually found on vegetation, particularly tree foliage.

In a revision of North American anyphaenid genera Platnick (1974) stated that the taxonomy of the approximately 375 Neotropical species was unclear. In a phylogenetic study, Ramírez (1995) established three anyphaenid subfamilies (Malenellinae Ramírez 1995, Anyphaeninae Bertkau 1878, Amaurobioidinae Hickman 1949), but considered the interfamilial relationships unclear. The subfamilies were delimited by the position of the tracheal spiracle, the structure of the tegulum and median haematodocha, and the structure of the female palpal tarsus.

Recent papers (Brescovit 1996 and references therein) have delimited many of the Recent Neotropical anyphaenid genera. Brescovit (1996) revised the Neotropical Anyphaeninae at the generic level, creating 14 new genera (new total 32), 12 new synonymies, and 70 new combinations. This paper newly combines the amber species *Anyphaeniodes bulla* (Wunderlich 1988) (= *Aysha bulla*) and *Lupettiana ligula* (Wunderlich 1988) (= *Teudis ligula*) in the light of Brescovit's (1996) revision (which omitted fossil taxa).

The Miocene Dominican Republic amber specimens studied, which are the only known representatives of the species concerned, were obtained from the Senckenberg Museum,

Frankfurt (SMF, courtesy of Dr. M. Graßhoff). This amber is considered to be approximately 15–20 million years old (Iturralde-Vinent & MacPhee 1996).

*Anyphaenoides bulla* (Wunderlich 1988)  
new combination  
Fig. 1

*Aysha bulla* Wunderlich 1988: 220, figs. 599–602, 764, holotype and only known specimen: male, SMF 38160, in Miocene Dominican Republic amber, examined.

**Emended diagnosis.**—Males of *A. bulla* can be recognized by the following combination of characters: embolus long, not forming a broad subcircular loop in the distal half of the cymbium, lacking a median constriction and a basal embolic process; large hook-shaped median apophysis with a broad base; tibia long with a simple retrolateral tibial apophysis. Female unknown.

**Remarks.**—This species can be excluded from *Aysha* Keyserling 1891 by having a simple palpal tibia (Wunderlich 1988: fig. 602) lacking complicated apophyses (e.g., Brescovit 1996: fig. 259).

*Lupettiana ligula* (Wunderlich 1988)  
new combination  
Fig. 2

*Teudis ligula* Wunderlich 1988: 221, figs. 603–605, 765, holotype and only known specimen: male, SMF 38152, in Miocene Dominican Republic amber, examined.

**Emended diagnosis.**—Males of *L. ligula* can be recognized by the following combination of characters: embolus (or conductor—see remarks) long, projecting ventrally; ventral tegular projection with pointed tip; retro-

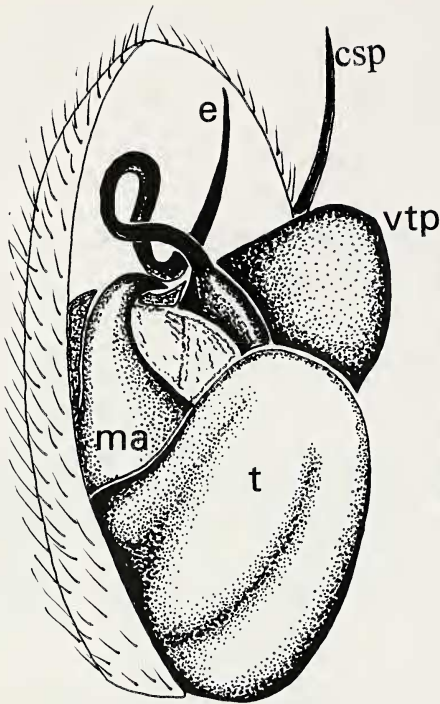


Figure 1.—Right pedipalp of *Anyphaenoides bulba* new combination, male holotype, SMF 38160. Scale = 0.2 mm. Abbreviations: csp = cymbial spine, e = embolus, ma = median apophysis, t = tegulum, vtp = ventral tegular projection.

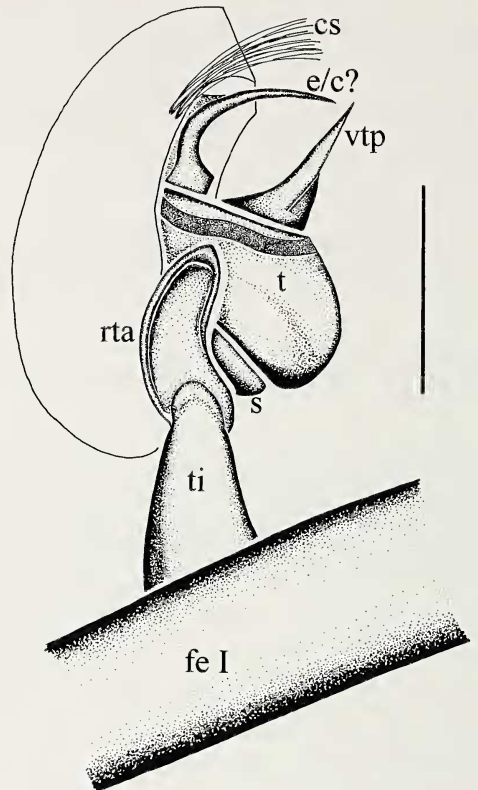


Figure 2.—Right pedipalp of *Lupettiana ligula* new combination, male holotype, SMF 38152. Scale = 0.2 mm. Abbreviations: cs = cymbial setae, e/c? = embolus or conductor (see remarks under *L. ligula*), fe I = femur I, rta = retrolateral tibial apophysis, s = subtegulum, t = tegulum, ti = palpal tibia, vtp = ventral tegular projection.

lateral tibial apophysis long, with rounded apex; palpal tibia without dorsal cusps. Female unknown.

**Remarks.**—In this specimen not all the palpal sclerites are visible because of the position in which the spider is preserved. The only view of the sclerites possible is that shown in Fig. 2, and it is not clear whether the anterior projection is the embolus or the conductor. However, the structure of the retrolateral tibial apophysis (Fig. 2; Wunderlich 1988: figs. 604–605) is a synapomorphy of the genus and is sufficient evidence for the proposed new combination. Eskov (1990) has commented that the amber spider fauna is taxonomically subequal to Recent faunas, and the certainty with which pattern-based species can be recognized in the fossil record is less than that for extant organisms (Smith 1994). This species can be excluded from *Teudis* O.P.-Cambridge 1896 by having a palpal tibia lacking short conical projections (e.g., Brescovit 1996: fig. 68).

#### *Wulfila spinipes* Wunderlich 1988

*Wulfila spinipes* Wunderlich 1988: 218, figs 589–598, 762–763, holotype male SMF 38136, and one male paratype, SMF 38144, both in Miocene Dominican Republic amber, examined.

**Remarks.**—*Wulfila* as currently delimited contains approximately 40 species with Nearctic and Neotropical distributions (Brescovit 1996). The interspecific relationships are unclear and the genus is in need of revision. The specimens described by Wunderlich are retained in *Wulfila* due to the structure of the complicated retrolateral tibial apophysis, the long ventral tegular projection and the conical ventral coxal projections. Unfortunately, legs I are missing in both holotype and paratype, so it is impossible to determine their lengths relative to legs II; however, the specimens do not possess the large and distinct ventral che-

lateral tooth present in *Wulfilopsis* (e.g., Brescovit 1996: fig. 34). Wunderlich's diagnosis serves only to separate this species from the other described Dominican Republic amber spiders, and is not sufficient to separate it from all the extant *Wulfila* species. An emended diagnosis will have to wait, pending revision of the extant species or, preferably, the amber specimen would be included in such a revision.

## DISCUSSION

These are the first fossil records of the genera *Anyphaenoides* and *Lupettiana*, taking them back 15–20 million years. As a result of the new combinations, *Aysha* and *Teudis* are not known in the fossil record.

*Lupettiana* is represented on Hispaniola by two, and *Wulfila* by three extant species, whereas *Anyphaenoides* is not recorded from the Recent Hispaniolan fauna (Penney 1999a). Brescovit's (1992) revision of the genus extended the known geographical range of *Anyphaenoides* from Peru, Ecuador and the Galápagos Archipelago, to include Panama, Venezuela, Surinam, Brazil and northern Argentina. Baert (1995) added Cocos Island in the Pacific. Hispaniola is unique in terms of its known spider fauna in that more families are recorded from fossil species in amber than are known from extant species (Wunderlich 1988; Penney 1999b). There have been 291 Recent species in 155 genera and 40 families recorded from Hispaniola (e.g., Banks 1903; Bryant 1943, 1945, 1948; Penney 1999a), but this fauna has not been intensively investigated using a variety of collecting techniques.

Evidence from sedimentary and geomorphic data, alluvial terraces and albedo reflectivity indices suggest that the Dominican Republic was not drastically affected by the Pleistocene glaciations (Schubert 1988), and the Tertiary Hispaniolan spider lineages have probably suffered no major habitat disruption that would cause their extinction. This is supported by the high degree of similarity between the species composition of the known Tertiary fauna and the Recent fauna (Penney 1999b). *Anyphaenoides* is recorded from the amber and is a component of the Recent Neotropical fauna; it can be predicted that this genus has at least one undiscovered Recent species present on Hispaniola.

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Manchester, Oxford Road, Manchester, M13 9PL, United Kingdom

**David Penney:** Invertebrate Zoology, The Manchester Museum, The University of

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